



Dual-Core Intel® Xeon® Processor LV 2.0 GHz

Delivering outstanding performance with low power for ultra-dense deployments

Intel's low-power, dual-core processor lets you intelligently grow your infrastructure, building in success with Intel

Intel continues its decades-long reputation of innovation, quality, and reliability with the new Dual-Core Intel® Xeon® processor LV 2.0 GHz. New dual-processor, low-power, high-density blade and rack-mounted servers based on the Dual-Core Intel Xeon processor LV 2.0 GHz allow you to continue to build in success with Intel as you build out new services critical to your company's success. This new low-power, dual-core processor allows you to attack your power/thermal and space constraints at the source – with power-efficient platform technologies from Intel.

Combined with the Intel® E7520 chipset and DDR2-400 memory, Intel's low-power, dual-core server processor can deliver rack-optimized solutions for high-performance technical and grid computing, and especially where space and power/thermal issues present key limitations.





Dual-core — and multi-core — for all usage models

Intel recognizes that one processor cannot deliver on all of IT's needs. So, Intel's portfolio of dual-core Intel® Xeon® processors includes a range of processors for solutions from the highest demands of 64-bit, dual-core, multi-processor computing to the power-saving 32-bit, Dual-Core Intel Xeon processor LV 2.0 GHz. And, Intel's continuing commitment to its multi-core processing roadmap means you can be confident that dual-core solutions you deploy today will be compatible with future multi-core platforms.

With up to 2X performance/watt, the Dual-Core Intel Xeon processor LV 2.0 GHz eases power/thermal and physical space constraints

Where performance *and* power matter, the Dual-Core Intel Xeon processor LV 2.0 GHz offers the ideal solution. With up to 2X the performance/watt over previous single-core Intel Xeon processors, Intel's lowest-power, dual-core server processor gives you additional capabilities to help deliver new services, build out more virtual environments, and cut operating costs.

The Dual-Core Intel Xeon processor LV 2.0 GHz is built using Intel's 65nm process technology, and the architecture is based on Intel's mobile core microarchitecture. Part of the company's long-term, multi-core roadmap, deployments based on the Intel Xeon processor LV 2.0 GHz is targeted to be compatible with a company's migration plans to future 64-bit, low-power, multi-core computing platforms from Intel.

For more information on performance, please visit
www.intel.com/performance/server/xeon/platform.htm



Improved performance, reliability, and flexibility, plus significant power savings needed in today's constrained data centers

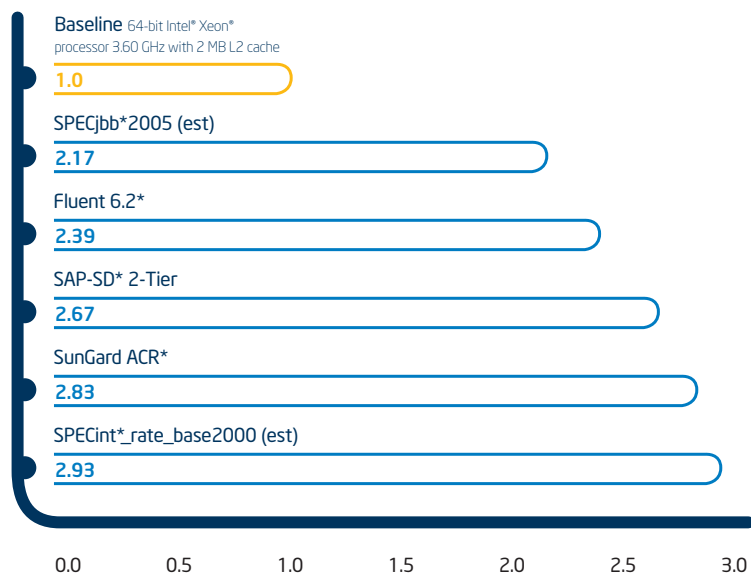
- New Dual-Core Intel Xeon processor LV 2.0 GHz improves processor performance with two cores per processor package – four cores in a DP platform.
- 2 MB of shared L2 cache gives faster response times.
- Up to 2X performance/watt of previous-generation, single-core Intel Xeon processors eases the power/thermal challenge in data centers while increasing performance.
- Support for DDR2-400 memory helps reduce power consumption even further – up to 40 percent – while increasing memory bandwidth with low latency.
- 667 MHz system bus and support for up to 16 GB of memory helps provide high performance, incredible scalability, and low power in a 32-bit computing environment.
- Demand-Based Switching (DBS) with Enhanced Intel SpeedStep® technology reduces CPU power consumption at lower processing demands.
- Scalable bandwidth with PCI Express* improves I/O performance.
- Intel's Execute Disable Bit functionality helps prevent certain classes of malicious buffer overflow and worm attacks.



Up to 2X performance/watt with
Dual-Core Intel Xeon processor LV 2.0 GHz

Dual-Core Intel® Xeon® processor LV 2.0 GHz: Server Platform Performance

Performance per system watt comparison with previous generation



Relative Performance: Higher is Better

Benchmark notes

SPECint*_rate_base2000: This benchmark evaluates the integer throughput of the measured system. Intel internal measurement (Feb 2005).

Baseline Platform configuration: Intel® Server Pre-Production Coyote System with two 64-bit Intel® Xeon® processors 3.60 GHz with 2 MB L2 Cache, Intel® E7520 Chipset, 800 MHz FSB; 8 GB DDR2-400 memory (8x1 GB); OS-Microsoft Windows 2003 Server Enterprise Edition* SPEC binaries built with Intel C++ Compiler 9.0.

New Platform Configuration: Intel® Server Pre-Production Alagash System with two Dual-Core Intel® Xeon® processors LV 2.0 GHz with 2 MB L2 Cache, Intel® E7520 Chipset, 667 MHz FSB; 8 GB DDR2-400 memory (8x1 GB); OS-Microsoft Windows 2003 Server Enterprise Edition* SPEC binaries built with Intel C++ Compiler 9.0.

SPECjbb* 2005: This workload evaluates the performance of Server-side Java Application. Performance measured in Business Operations Per Second. (Bops). Intel internal measurement (Feb 2005).

Baseline Platform configuration: Intel® Server Pre-Production Coyote System with two 64-bit Intel® Xeon® processors 3.60 GHz with 2 MB L2 Cache, Intel® E7520 Chipset, 800 MHz FSB; 8 GB DDR2-400 memory (8x1 GB); OS-Microsoft Windows 2003 Server Enterprise Edition* BEA WebLogic JRockit* 5.0 jvm.

New Platform Configuration: Intel® Server Pre-Production Alagash System with two Dual-Core Intel® Xeon® processors LV 2.0 GHz with 2 MB L2 Cache, Intel® E7520 Chipset, 667 MHz FSB; 8 GB DDR2-400 memory (8x1 GB); OS-Microsoft Windows 2003 Server Enterprise Edition* BEA WebLogic JRockit* 5.0 jvm.

SAP-SD* 2-tier: SAP-SD measures the performance of Enterprise resource planning servers using mySAP Business suite* It measures performance in number of users. Intel internal measurement (Feb 2005).

Baseline Platform configuration: Intel® Server Pre-Production Coyote System with two 64-bit Intel® Xeon® processors 3.60 GHz with 2 MB L2 Cache, Intel® E7520 Chipset, 800 MHz FSB; 8 GB DDR2-400 memory (8x1 GB); OS-Microsoft Windows 2003 Server Enterprise Edition* Application server: SAP R/3 Enterprise* v4.7 SR1. Database: Microsoft SQL Server 2000* SAP 2-Tier SD* benchmark kit.

Disclaimers

Relative performance for each benchmark is calculated by taking the actual benchmark result for the first platform tested and assigning it a value of 1.0 as a baseline. Relative performance for the remaining platforms tested was calculated by dividing the actual benchmark result for the baseline platform into each of the specific benchmark results of each of the other platforms and assigning them a relative performance number that correlates with the performance improvements reported.

Performance tests and ratings are measured using specific computer systems and/or components and reflect the approximate performance of Intel® products as measured by those tests. Any difference in system hardware or software design or configuration may affect actual performance. Buyers should consult other sources of information to evaluate the performance of systems or components they are considering purchasing. For more information on performance tests and on the performance of Intel products, reference http://www.intel.com/performance/resources/benchmark_limitations.htm or call (U.S.) 1-800-628-8686 or 1-916-356-3104.

Intel® EM64T requires a computer system with a processor, chipset, BIOS, operating system, device drivers and applications enabled for Intel EM64T. Processor will not operate (including 32-bit operation) without an Intel EM64T-enabled BIOS. Performance will vary depending on your hardware and software configurations. See <http://developer.intel.com/technology/64bitextensions/> for more information including details on which processors support Intel EM64T or consult with your system vendor for more information.

Performance tests and ratings are measured using specific computer systems and/or components and reflect the approximate performance of Intel products as measured by those tests. Any difference in system hardware or software design or configuration may affect actual performance.

New Platform Configuration: Intel® Server Pre-Production Alagash System with two Dual-Core Intel® Xeon® processors LV 2.0 GHz with 2 MB L2 Cache, Intel® E7520 Chipset, 667 MHz FSB; 8 GB DDR2-400 memory (8x1 GB); OS-Microsoft Windows 2003 Server Enterprise Edition* Application server: SAP R/3 Enterprise* v4.7 SR1. Database: Microsoft SQL Server 2000* SAP 2-Tier SD* benchmark kit.

Fluent 6.2*: This HPC workload evaluates the performance of a Computational Fluid dynamics application. Performance measured in jobs/day. Intel internal measurement (Feb 2005).

Baseline Platform Configuration: Intel® Server Pre-Production Coyote System with two 64-bit Intel® Xeon® processors 3.60 GHz with 2 MB L2 Cache, Intel® E7520 Chipset, 800 MHz FSB; 8 GB DDR2-400 memory (8x1 GB); OS-Red Hat Enterprise Linux* AS release 4 (Nahant Update 2) EM64T.

New Platform Configuration: Intel® Server Pre-Production Alagash System with two Dual-Core Intel® Xeon® processors LV 2.0 GHz with 2 MB L2 Cache, Intel® E7520 Chipset, 667 MHz FSB; 8 GB DDR2-400 memory (8x1 GB); OS-Red Hat Enterprise Linux* AS release 4 (Nahant Update 2) 32-bit version.

SunGard ACR*: This benchmark evaluates the performance of a Financial Services system. Intel internal measurement (Feb 2005).

Baseline Platform configuration: Intel® Server Pre-Production Coyote System with two 64-bit Intel® Xeon® processors 3.60 GHz with 2 MB L2 Cache, Intel® E7520 Chipset, 800 MHz FSB; 8 GB DDR2-400 memory (8x1 GB); OS-Microsoft Windows 2003 Server Enterprise Edition*.

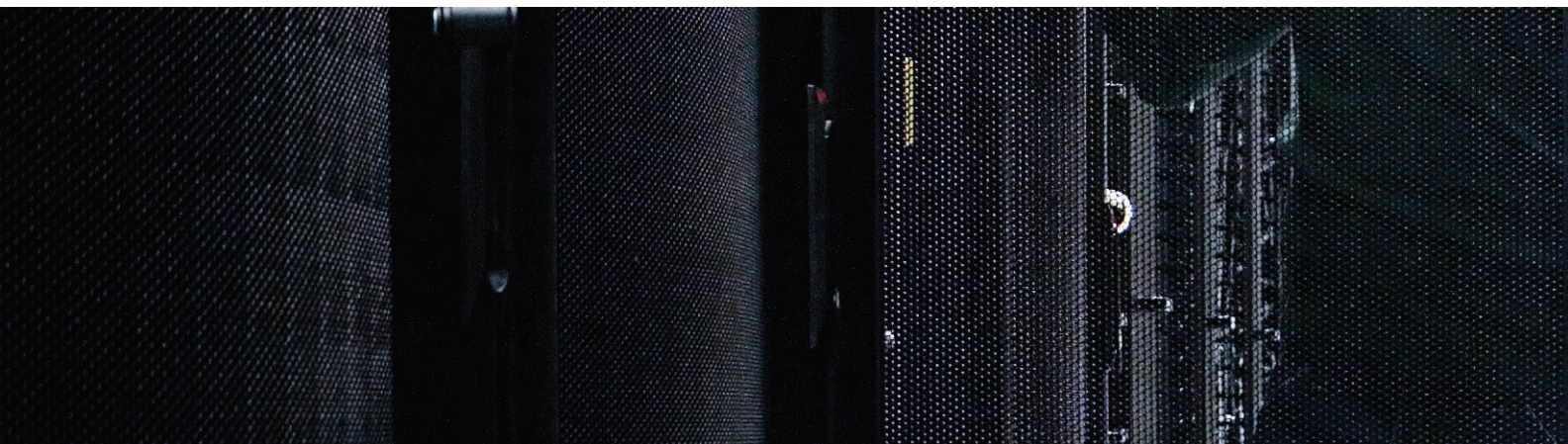
New Platform Configuration: Intel® Server Pre-Production Alagash System with two Dual-Core Intel® Xeon® processors LV 2.0 GHz with 2 MB L2 Cache, Intel® E7520 Chipset, 667 MHz FSB; 8 GB DDR2-400 memory (8x1 GB); OS-Microsoft Windows 2003 Server Enterprise Edition*.

Performance Per Watt Computation: Performance Per Watt for these workloads was computed using system power measurements made for the SunGard ACR* workload.

Dual-Core Intel Xeon Processor LV 2.0 GHz overview

DP blades and 1U rack-mount servers based on the Dual-Core Intel Xeon processor LV 2.0 GHz improve performance, power-savings, reliability, versatility, and low ownership costs.

Features	Benefits
Two low-power processor cores	<ul style="list-style-type: none">▪ Significant performance headroom at low power for multi-threaded applications
Demand-Based Switching (DBS) with Enhanced Intel SpeedStep® technology	<ul style="list-style-type: none">▪ Enables platform and software power management features to help lower average power consumption while maintaining application performance and improving acoustics
2 MB integrated L2 cache	<ul style="list-style-type: none">▪ More data can be stored closer to processor execution units for faster data access, resulting in higher system throughput and shorter system latency
Up to 2X performance/watt	<ul style="list-style-type: none">▪ Allows rack-optimized solutions in ultra-dense deployments and reduces power/thermal and space constraints in data centers
Support for DDR2-400 memory	<ul style="list-style-type: none">▪ Provides up to 20% increase in memory bandwidth over DDR-333▪ Up to 30 to 40% lower power consumption vs. DDR-333x▪ Increased DIMMs per system for enhanced memory scalability
Supports up to 16 GB of memory	<ul style="list-style-type: none">▪ Access large data sets with 32-bit computing
Enhanced reliability and manageability with Intel E7520 chipset	<ul style="list-style-type: none">▪ Many memory controller features, together with PCI Express* RAS features combine to help improve platform reliability vs. previous-generation platforms▪ New features include Error Correcting Code (ECC) system bus, new memory RAID, and I/O and memory hot-plug▪ The Intel E7520 chipset includes an SMBus port for remote management operation and support for a variety of third-party BMC (base management controller) and BIOS solutions
Support for PCI Express*	<ul style="list-style-type: none">▪ Next-generation I/O capable of up to 8 GB/s peak bandwidth▪ Improved RAS features compared to PCI-X*▪ Lower latency compared to PCI-X for improved I/O performance▪ Software compatible with PCI-X to simplify parallel-to-serial transition



Platform Solutions

When matched with the Intel E7520 chipset and DDR2-400 memory, the Dual-Core Intel Xeon processor LV 2.0 GHz offers an optimized solution for blades and 1U rack-mount servers with the following enhanced RAS features.

RAS Features	Benefits
Error Correcting Code (ECC)	<ul style="list-style-type: none">The system detects single-bit and double-bit errors and automatically corrects single-bit errors on internal data paths
Memory RAID	<ul style="list-style-type: none">Similar to RAID for disks, Memory RAID uses partitions of the system memory as independent, redundant data stores to help enable reconstruction of the system data even in the event of a memory board failure
Demand and patrol scrubbing	<ul style="list-style-type: none">The system proactively searches the system memory, repairing correctable errors or permanently marking the memory location as unreadable
SMBus with PIROM and thermal sensor	<ul style="list-style-type: none">This feature allows for scheduled service in the event of a system manufacturing defect or cooling device failure, going to a lower power state if a critical temperature is reached
Memory mirroring	<ul style="list-style-type: none">Splits the memory subsystem and duplicates the data in each half. The redundant memory image is used as a check against errors in the memory
Hot-plug I/O and memory	<ul style="list-style-type: none">Add memory or I/O after installation without service interruption
DIMM sparing	<ul style="list-style-type: none">Swaps "defective" DIMMs with installed but otherwise unused DIMMs
X8 single device data correction (X8 SDDC)	<ul style="list-style-type: none">Allows you to fix the failure of an entire DRAM device on-the-fly by removing a single DRAM from the memory map and recovering its data into a new device

Find out more about the Intel Xeon processor family at
www.intel.com/products/processor/xeon



Contacts

United States and Canada

Intel Corporation
Robert Noyce Building
2200 Mission College Blvd.
P.O. Box 58119
Santa Clara, CA 95052-8119
USA

Europe

Intel Corporation (UK) Ltd.
Pipers Way
Swindon
Wiltshire SN3 1RJ
UK

Asia-Pacific

Intel Semiconductor Ltd.
32/F Two Pacific Place
88 Queensway, Central
Hong Kong, SAR

Japan

Intel Japan (Tsukuba HQ)
5-6
Tokodai Tsukuba-shi
300-2635 Ibaraki-ken
Japan

South America

Intel Semicondutores do Brasil LTDA
Av. Dr. Chucris Zaidan, 940-10º andar
04583-904 São Paulo, SP
Brazil

Information in this document is provided in connection with Intel products. No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document. Except as provided in Intel's Terms and Conditions of Sale for such products, Intel assumes no liability whatsoever, and Intel disclaims any express or implied warranty, relating to sale and/or use of Intel products including liability or warranties relating to fitness for a particular purpose, merchantability, or infringement of any patent, copyright or other intellectual property right. Intel products are not intended for use in medical, life saving, or life sustaining applications. Intel may make changes to specifications and product descriptions at any time, without notice.

*Other names and brands may be claimed as the property of others.
Copyright © 2006 Intel Corporation. All rights reserved.

Intel, the Intel logo, Intel. Leap ahead., Intel. Leap ahead. logo, Xeon, and Intel SpeedStep are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries.

Printed in USA

0206/KSW/OCG/XX/PDF

♻️ Please Recycle

311813-001US

